Alternate Management System Review Checklist

A Guideline (G8) Specification (G8 Section noted in brackets)	B Cross Reference Applicant to identify page, paragraph and/or table where this information is located)	C Adequacy (USCG to note Y/N/NA)	D Comments (Applicant – black; USCG – red)
1. **BWMS documentation [5]**			
1.1. BWMS description, including diagrammatic drawing(s) showing typical pumping and piping arrangements (including a Bill of Materials and the specifications and standard(s) which it meets), sampling facilities for control and monitoring systems, operational outlets for treated water and waste streams [5.1]			
BWMS Description	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part II System Description ► Section 4. System Technologies, p.6-7; AND ► Section 5. System Components, p.8-11		
Drawings	1. BWMS DOCUMENTATION ► Document 1.3. Installation Henrietta Kosan; AND ► Document 1.4 BAWAT P&I_diagram_2014-09-12_Ver.A		See Supplemental Comments Sheet
Sampling facilities for control and monitoring systems	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part II System Description ► Section 7. Control and Monitoring ► 7.2 Description of the main components, p. 14-15		
Operational outlets for treated water and waste	Not applicable		Due to the design of the system, there is no treated water and/or waste. Treated ballast water is returned directly to the ballast tank.
1.1.1. Control equipment automatically monitors and adjusts necessary treatment dosages, intensities or other aspects of the BWMS necessary for proper administration of necessary treatment [4.10]	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part II System Description ► Section 7. Control and Monitoring ► 7.1 Description of the main components, p. 14-15 1. BWMS DOCUMENTATION ► Document 1.5 SDS Ballast water treatment ► Section 3. System description, p. 8-16		

Enclosure (2)

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A Guideline (G8) Specification	B Cross Reference	C Adequacy	D Comments
1.1.2. Control equipment incorporates a continuous self-monitoring function when BWMS is in operation [4.11]	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part II System Description ► Section 7. Control and Monitoring ► 7.2 Description of the main components, p.14 1. BWMS DOCUMENTATION ► Document 1.5 SDS Ballast water treatment ► Section 4 PLC – General system ► 4.2 Program Structure ► 4.2.5 Warnings, p. 19-20		
1.1.3. Monitoring equipment records the proper functioning or failure of the BWMS. [4.12]	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part II System Description ► Section 7. Control and Monitoring ► 7.3 Data Recordings, p.15-16		
1.1.4. Control equipment stores data on monitored functions and conditions for at least 24 months; stored data can be displayed or printed for inspection. [4.13]	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part II System Description ► Section 7. Control and Monitoring ► 7.3 Data Recordings, p. 15		
1.2. Protection against interference [4.5]	1. BWMS DOCUMENTATION ► Document 1.7 FS Ballast water treatment ► Section 7 Interfaces ► Subsection 7.2 User Interface to ballast water treatment system CMU, p. 13		
1.2.1. Every access beyond requirements of 4.4 requires breaking a seal [4.5.1]	1. BWMS DOCUMENTATION ► Document 1.7 FS Ballast water treatment ► Section 7 Interfaces ► Subsection 7.2 User Interface to ballast water treatment system CMU, p. 13		
1.2.2. Visual alarm is activated whenever the BWMS is in operation for purpose of cleaning, calibration, or repair; such events recorded by control equipment. [4.5.2]	1. BWMS DOCUMENTATION ► Document 1.10 Alarm List 1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part III System Operation ► Section 10 Normal operation ► Subsection 10.1 Operating procedures, p. 18 1. BWMS DOCUMENTATION ► Document 1.7 FS Ballast water treatment ► Section 2 ► Subsection 2.3 Alarms, p. 6-7		
1.2.3. Suitable emergency over-rides/bypasses to protect ship and crew. [4.5.3]	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part III System Operation ► Section 11 Emergency shutdown and system by-pass procedures, p. 21		

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1.2.4. By-passes active an alarm and the event is recorded by the control equipment. [4.5.4]	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part III System Operation ► Section 10 Normal operation ► Subsection 10.3 Bypass scenarios during normal operation, p. 20 1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part II System Description ► Section 11 Emergency shutdown and system by-pass procedures, p. 21		See Supplemental Comments Sheet
1.3. Audible and visual alarm signals in stations from which ballast water operations and ballast water management are controlled. [4.3]	1. BWMS DOCUMENTATION ► Document 1.7 FS Ballast water treatment ► Section 2 ► Subsection 2.3 Alarms, p. 6-7 AND ► Subsection 2.1 CMU System Description, p. 5 1. BWMS DOCUMENTATION ► Document 1.2. Design Guidelines and Operation Sequences_ver.D_2014_10_30 ► Section 4. Handling of alarms and warnings p. 11-12		The Control and Monitoring Unit (CMU) processes all alarms generated by the system and is fully integrated into the ship's alarm system. All alarms are sounded over the ship's alarm system.
1.4. Manufacturer's equipment manuals containing details of major components of the BWMS and their operation and maintenance. [5.1.2]	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part I General Information ► Section 5 system Components, p. 8-11; AND ► Section 6. Components drawings p. 12-13; AND ► Section 7. Control and Monitoring, p. 14-17; AND ► Part IV System Maintenance, p. 23-28		
1.5. Operation and technical manual for complete BWMS covering arrangements, operation, and maintenance of the BWMS as a whole, and specifically describing any parts not covered by manufacturer's equipment manuals. [5.1.3]	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part IV System Maintenance, p. 23-28 1. BWMS DOCUMENTATION ► Document 1.5 SDS Ballast water treatment 1. BWMS DOCUMENTATION ► Document 1.6 CMU User Instruction 1. BWMS DOCUMENTATION ► Document 1.7 FS Ballast Water Treatment		Documents 1.5, 1.6, and 1.7 are functional specifications, manuals and maintenance information for the CMU and associated components.
1.5.1. Operations section of the manual includes normal operational procedures. [5.1.4]	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part III System Operation ► Sections 8 - 11, p. 18-21		
1.5.2. Documentation of simple and effective means for operation and control. [4.8]	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part III System Operation ► Sections 8 - 11, p. 18-21		

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1.5.3. Operations manual includes procedures in the event of a malfunction of the BWMS, including emergency actions necessary for securing the ship. [5.1.4]	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part III System Operation ► Section 11, p. 21		
1.5.4. Operations manual contains maintenance procedures. [5.1.3]	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part IV System Maintenance, p. 23-28		
1.6. All working parts of the BWMS liable to wear or damage easily accessible for maintenance. [4.4]	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part IV System Maintenance, p. 23-28		
1.6.1. Means provided to check on drift of, repeatability by, measuring devices that are part of control equipment and for re-zeroing control equipment meters. [4.14]	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part IV System Maintenance ►Section 18, Troubleshooting, p. 25-26		
1.6.2. Facilities incorporated for checking the performance/calibration of components of BWMS that take measurements. [4.6]	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part IV System Maintenance ►Section 18, Troubleshooting, p. 25-26		
1.7. Operations manual describes methods for conditioning of treated water prior to discharge to control residual treatment chemicals, disinfection by products, and the general suitability of the treated water for discharge. [5.1.5]	N/A		
1.8. Technical section of the manual includes adequate information (including description and diagrammatic drawings of monitoring and electrical/electronic wiring) to enable fault finding. [5.1.7]	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part IV System Maintenance ►Section 18, Troubleshooting, p. 25-26; AND ► Part 1. General Information ► Section 5. System Components, p. 8-11; AND ► Section 6. Components drawings, p. 12-13; AND ►Document 1.14. Eltronic Tech Manual		
1.9. Technical section of the manual includes specifications defining, inter alia, requirements for location and mounting of components, arraignments for sampling by control and monitoring equipment, and arrangements for ensuring safe operation. [5.1.8]	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part 1. General Information ► Section 5 System Components, p. 8-11 1. BWMS DOCUMENTATION ► Document 1.4 P&I Diagram_2014-09-12_Ver.A		
1.9.1. BWMS components, if intended for fitting in locations where flammable atmospheres may be present, comply with relevant safety regulations, certified by Administration as safe for use in a hazardous area. [4.9]	N/A		See Supplemental Comments Sheet

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1.10. Operations and technical manual contains a recommended test and checkout procedure, specifying all the checks to be carried out in a functional test following installation and a test by a surveyor when carrying out an onboard survey to confirm the installation meets the manufacturer's specific installation criteria. [5.1.9]	1. BWMS DOCUMENTATION ► Document 1.2. Design Guidelines and Operations Sequences_ver. D_2014_10_30		See Supplemental Comments Sheet
1.11. BWMS is robust and suitable for working in the shipboard environment, with design, construction and materials, including electronic and electrical components, including a Bill of Materials and the specifications and standard(s) which it meet(s), adequate for intended service. [4.7.3]			See Supplemental Comments Sheet
2.			
2.1. Type approval certificate issued by, or on behalf of, the Administration. [6.1]	2. TYPE APPROVAL CERTIFICATES ► Document 2.1 Bawat Type Approval Certificate 2014-10-31		
2.1.1. Specification of any limiting conditions on the usage of the BWMS, including but not limited to ballast water volumes, flow rates, salinity, temperature, etc. [6.1 and 6.2]	2. TYPE APPROVAL CERTIFICATES ► Document 2.1 Bawat Type Approval Certificate 2014-10-31		
2.1.2. Specification of the type and model of the BWMS, including identification of duly dated equipment assembly drawings bearing model specification numbers or equivalent identification details. [6.5]	2. TYPE APPROVAL CERTIFICATES ► Document 2.1 Bawat Type Approval Certificate 2014-10-31		
3.			
3.1. Protections reduce to minimum danger to persons (i.e., hot surfaces, moving parts, exposure to chemicals, UV, etc) [4.7]	1. BWMS DOCUMENTATION ► Document 1.1 OMSM BD 2014.006_Rev.E 2014 10 29 ► Part V. Safety, p.29-31		
3.2. Complete application dossiers for IMO active substance basic and final approvals [Annex Part 1, 1.6.4]	N/A		
3.3. Adequate arrangements for storage, application, mitigation, and safe handling of any substances of a dangerous nature [4.2]	N/A		
4.			

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4.1. Quality Management Plan (QMP) addressing the quality control management structure and policies of the testing body, including all subcontractors and outside laboratories) [Annex Part 2, 2.1.2.2]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.A. Shipboard Testing ► 4.A.2. Bawat BWTS Ship Board Test Reports 10 09 2014 ► Quality Management Plan and Quality Assurance Project Plan, p. 18-105 4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.B. Land-based Testing ► 4.B.1. BAWAT_Final_report_Landbased_test ► Appendix 1 ► Quality Management Plan, p. 41-54/512		
4.2. Quality Assurance Project Plan (QAPP) describing the specifics of the BWMS, the test facility, and other conditions affecting the design and implementation of the test procedures [Annex Part 2, 2.1.2.3]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.A. Shipboard Testing ► 4.A.2. Bawat BWTS Ship Board Test Reports 10 09 2014 ► Quality Management Plan and Quality Assurance Project Plan, p. 18-105 4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.B. Land-based Testing ► 4.B.1. BAWAT_Final_report_Landbased_test ► Appendix 1 ► Quality Management Plan, p. 51-52/512		
4.3. Shipboard Test Plan and Report [Annex Part 2, 2.2.2.1]			
4.3.1. Documentation that treatment rated capacity of BWMS was appropriate for ship [Annex Part 2, 2.2.2.2]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.A. Shipboard Testing ► 4.A.2. Bawat BWTS Ship Board Test Reports 10 09 2014 ► Quality Management Plan and Quality Assurance Project Plan ► Section 3. Description of the ballast water management system and the test vessel; p. 358/784		See Supplemental Comments Sheet
4.3.2. Documentation that the volume and pumping rate of ballast water during test was consistent with normal ballast operations of ship [Annex Part 2, 2.2.2.3]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.A. Shipboard Testing ► 4.A.2. Bawat BWTS Ship Board Test Reports 10 09 2014 ► Quality Management Plan and Quality Assurance Project Plan ► Section 3. Description of the ballast water management system and the test vessel; p. 358/784		See Supplemental Comments Sheet

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4.3.3. Documentation of all test cycles, demonstrating three valid consecutive test cycles showing discharge of treated ballast water meeting regulation D-2 standard [Annex Part 2,2.2.2.4 and 2.2.2.9]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.A. Shipboard Testing ► 4.A.1. BAWAT SYSTEM Ship Board Test Summary Reports ► Test Run Report 1st and 2nd Shipboard Tests ► Section 3. Results ► Subsection 3.2.1 Test Run 1, p. 6/27; AND ►Subsection 3.2.2 Test Run 2, p. 7/27; AND ► Section 6. Discussion of the results, p. 13/27 ► Test Run Report 3rd Shipboard Test ► Section 3. Results ► Subsection 3.2.1 Test Run 3, p. 19-20/27; AND ► Section 6. Discussion of the results, p. 26/27		Shipboard Test Summary Reports contain excerpts from full Test Report and is included for ease of reviewing the report.
4.3.4. Tests meet minimum organism concentrations during uptake of more than 10 times the maximum permitted values in regulation D-2.1. [Annex Part 2, 2.2.2.5]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.A. Shipboard Testing ► 4.A.1. BAWAT SYSTEM Ship Board Test Summary Reports ► Test Run Report 1st and 2nd Shipboard Tests ► Section 3. Results ► Subsection 3.2.1 Test Run 1, p. 6/27; AND ►Subsection 3.2.2 Test Run 2, p. 7/27; AND ► Test Run Report 3rd Shipboard Test ► Section 3. Results ► Subsection 3.2.1 Test Run 3, p. 19-20/27		
4.3.5. Documentation that sampling regime was appropriate, either by meeting G8 recommendations for control and treated ballast water including: 1) Control tank replicates 2) Treatment tank replicates 3) Sample sizes; or 4) By documenting appropriate validation of sample volumes and numbers, per EPA ETV. [Annex Part 2, 2.2.2.6]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.A. Shipboard Testing ► 4.A.2. Bawat BWTS Ship Board Test Reports 10 09 2014 ► Quality Management Plan and Quality Assurance Project Plan ► Section 5. Experimental approach, p. 31-34/784; AND ► Section 6. On board sampling scenario, p.34-39/784		
4.3.6. Documentation that test cycles completed over at least six months. [Annex Part 2, 2.2.2.7]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.A. Shipboard Testing ► 4.A.1. BAWAT SYSTEM Ship Board Test Summary Reports ► Test Run Report 1st and 2nd Shipboard Tests ► Section 3. Results ► Subsection 3.2.1 Test Run 1, p. 6/27; AND ►Subsection 3.2.2 Test Run 2, p. 7/27; AND ► Test Run Report 3rd Shipboard Test ► Section 3. Results ► Subsection 3.2.1 Test Run 3, p. 19-20/27		Tests were conducted between September 2013 and May 2014

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4.3.7. Documentation of source water characterization for salinity, temperature, POC, and TSS. [Annex Part 2, 2.2.2.9]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.A. Shipboard Testing ► 4.A.1. BAWAT SYSTEM Ship Board Test Summary Reports ► Test Run Report 1st and 2nd Shipboard Tests ► Section 3. Results ► Subsection 3.2.1 Test Run 1, p. 6/27; AND ►Subsection 3.2.2 Test Run 2, p. 7/27; AND ► Test Run Report 3rd Shipboard Test ► Section 3. Results ► Subsection 3.2.1 Test Run 3, p. 19-20/27		
4.3.8. Documentation of system operations, including: 1) Volume and locations of uptake & discharge volume;	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.A. Shipboard Testing ► 4.A.2. Bawat BWTS Ship Board Test Reports 10 09 2014 ► GoConsult Bawat Test Run 1 and 2_ver.1_01 10 2013 C ► Section 3. Results ► 3.2.1. Test Run 1; p. 111/784; AND ► 3.2.2 Test Run 2; p. 112/784; AND ► GoConsult Bawat Test Run 3_ver.1_25 06 2014B ► Section 3. Results ► 3.2.1 Test Run 3, p. 455/784		
2) Possible reasons for unsuccessful test cycle or failure of a cycle to meet D-2 Standard.	N/A		
3) Scheduled maintenance;	N/A		
4) Unscheduled maintenance and repair;	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.A. Shipboard Testing ► 4.A.2. Bawat BWTS Ship Board Test Reports 10 09 2014 ► Executive Summary, p. 7/784		
5) Appropriate engineering parameters; and	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.A. Shipboard Testing ► 4.A.2. Bawat BWTS Ship Board Test Reports 10 09 2014 ► Table “Summary of Ship Board Test Process Data”, p. 15/784		
6) Proper functioning of control and monitoring equipment. [Annex Part 2, 2.2.2.10]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.A. Shipboard Testing ► 4.A.2. Bawat BWTS Ship Board Test Reports 10 09 2014		The system functioned as designed throughout the shipboard test. No errors or malfunctions encountered during the shipboard test.
4.4. Land-based Test Plan and Report [Annex Part 2, 2.4)			
4.4.1. Description of test set-up, including:			

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1) Arrangement of BWMS [Annex Part 2, 2.3.9]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.B. Land-based Testing ► 4.B.1. BAWAT_Final_report_ Landbased_test ► Section 5 Testing Laboratory, p 12/512; AND ► Section 6. Ballast water management system, p. 13/512; AND ► Section 7 Experimental design, p. 13-14/512; AND ► Appendix 1. Quality Assurance Project Plan ► Section 3. Description of testing laboratory, p.74-79/512		
2) Piping and pumping arrangements [Annex Part 2, 2.3.9]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.B. Land-based Testing ► 4.B.1. BAWAT_Final_report_ Landbased_test ► Section 5 Testing Laboratory, p 12/512; AND ► Section 6. Ballast water management system, p. 13/512; AND ► Section 7 Experimental design, p. 13-14/512; AND ► Appendix 1. Quality Assurance Project Plan ► Section 3. Description of testing laboratory, p.74-79/512		
3) Tank specifications (treatment and control)[Annex Part 2, 2.3.12]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.B. Land-based Testing ► 4.B.1. BAWAT_Final_report_ Landbased_test ► Section 5 Testing Laboratory, p 12/512; AND ► Section 6. Ballast water management system, p. 13/512; AND ► Section 7 Experimental design, p. 13-14/512; AND ► Appendix 1. Quality Assurance Project Plan ► Section 3. Description of testing laboratory, p.74-79/512		
4) Facilities for representative sampling [Annex Part 2, 2.3.12]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.B. Land-based Testing ► 4.B.1. BAWAT_Final_report_ Landbased_test ► Appendix 1. Quality Assurance Project Plan ► Section 7 Sampling and analysis plan, p. 83/512		
5) Augmentation facilities for DOC, POC, TSS and standard test organisms if used [Annex Part 2, 2.3.12]; and	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.B. Land-based Testing ► 4.B.1. BAWAT_Final_report_ Landbased_test ► Appendix 1. Quality Assurance Project Plan ► Section 6 Challenge conditions ► Subsection 6.1 Test water, p. 81/512		

A Guideline (G8) Specification	B Cross Reference	C Adequacy	D Comments
6) Monitoring facilities for environmental parameters including pH, temperature, salinity, dissolved oxygen, TSS, DOC, POC, and turbidity. [Annex Part 2, 2.3.12]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.B. Land-based Testing ► 4.B.1. BAWAT_Final_report_ Landbased_test ► Appendix 1. Quality Assurance Project Plan ► Section 8.Data management, analyses and reporting ► Subsection 8.2.4 Physical/chemical analyses, p. 85/512		Monitoring of required parameters is completed automatically in accordance with DHI SOP 30/1764.
4.4.2. Documentation that system was operated at treatment rated capacity, or scaled as follows:			
1) 200 m3 / hr < TRC < 1,000 m3 / hr – downscaled no more than 1:5	Not applicable		
2) TRC>1,000 m3 – downscaled no more than 1:100	Not applicable		
3) Documentation of mathematical modeling and/or calculations demonstrating downscaling used would not affect functioning and effectiveness onboard ship at full scale for which certification is intended. [Annex Part 2, 2.3.13]	Not applicable		
4.4.3. Description of cleaning procedures for test set-up before starting testing, and between test cycles. [Annex Part 2, 2.3.11]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.B. Land-based Testing ► 4.B.1. BAWAT_Final_report_ Landbased_test ► Appendix 1. Quality Assurance Project Plan ► Section 5. Experimental design ► Subsection 5.3.3 Discharge of test water, p. 80/512		Tanks are cleaned following each test run in accordance with DHI SOP 30/1763.
4.4.4. Description of sampling and analysis procedures for organisms and environmental/water quality parameters, including:			
1) Identification of standard methods [Annex Part 2, 4.2] ;	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.B. Land-based Testing ► 4.B.1. BAWAT_Final_report_ Landbased_test ► Appendix 1. Quality Assurance Project Plan ► Section 7 Sampling and analysis plan, p. 83-84/512; AND ► Section 8 Data management, analyses and reporting, p. 85-86/512		DHI SOPs are used for all sampling and analysis procedures and have been vetted by Lloyds and DNV/GL as appropriate for G8i testing.
2) Validation of non-standard methods. [Annex Part 2, 4.3] ;	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.B. Land-based Testing ► 4.B.1. BAWAT_Final_report_ Landbased_test ► Appendix 1. Quality Assurance Project Plan ► Section 7 Sampling and analysis plan, p. 83-84/512; AND ► Section 8 Data management, analyses and reporting, p. 85-86/512		DHI SOPs are used for all sampling and analysis procedures and have been vetted by Lloyds and DNV/GL as appropriate for G8i testing.

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3) Validation of appropriateness of sample processing times [Annex Part 2, 2.3.34]; and	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.B. Land-based Testing ► 4.B.1. BAWAT_Final_report_ Landbased_test ► Appendix 1. Quality Assurance Project Plan ► Section 7 Sampling and analysis plan, p. 83-84/512; AND ► Section 8 Data management, analyses and reporting, p. 85-86/512		DHI SOPs are used for all sampling and analysis procedures and have been vetted by Lloyds and DNV/GL as appropriate for G8i testing.
4) Description and validation of facilities and procedures for collecting representative samples [Annex Part 2, 2.3.1; 2.3.17; 2.3.18; 2.3.19; 2.3.20; 2.3.36]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.B. Land-based Testing ► 4.B.1. BAWAT_Final_report_ Landbased_test ► Appendix 1. Quality Assurance Project Plan ► Section 7 Sampling and analysis plan, p. 83-84/512; AND ► Section 8 Data management, analyses and reporting, p. 85-86/512		DHI SOPs are used for all sampling and analysis procedures and have been vetted by Lloyds and DNV/GL as appropriate for G8i testing.
4.4.5. Results of all analyses for organisms, challenge conditions, and BWMS performance indicators [Annex Part 2, 2.3.23; 2.3.24]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.B. Land-based Testing ► 4.B.1. BAWAT_Final_report_ Landbased_test ► Section 9. Results from biological efficacy test cycles ► Table 9.6, p. 32/512; AND ►Table 9.7, p. 33/512; AND ► Table 9.8, p. 34/512; AND ► Table 9.9, p. 35/512, AND ► Table 9.10, p. 36/512; AND ► Table 10.1, p. 37/512		
4.4.6. Documentation the BWMS was operated, and performed as designed within its specified parameters, including power consumption, flow rate, etc. [Annex Part 2, 2.3.4; 2.3.24]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.B. Land-based Testing ► 4.B.1. BAWAT_Final_report_ Landbased_test ► Section 7 Sampling and analysis plan ► Trial period and survey of the BAWAT BWMS, p. 15/512		
4.4.7. Documentation of all test cycles, demonstrating 5 valid tests with treated water meeting the D-2 discharge standard for each salinity regime for which testing was conducted [Annex Part 2, 2.3.1; 2.3.17; 2.3.18; 2.3.19; 2.3.20; 2.3.36]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.B. Land-based Testing ► 4.B.1. BAWAT_Final_report_ Landbased_test ► Section 9. Results from biological efficacy test cycles ► Table 9.6, p. 32/512; AND ►Table 9.7, p. 33/512; AND ► Table 9.8, p. 34/512; AND ► Table 9.9, p. 35/512, AND ► Table 9.10, p. 36/512; AND ► Table 10.1, p. 37/512		

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A Guideline (G8) Specification	B Cross Reference	C Adequacy	D Comments
4.5. Environmental Testing [Annex Part 3]			
4.5.1. Documentation of vibration tests [Annex Part 3, 3.4 – 3.7]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.C. Environmental Testing ► 4.C.1. DELTA Test Report-Component Testing ► Section 4. Test and Results ► Subsection 4.11 Vibration-Resonance Search, p. 15-16; AND ►Subsection 4.12 Vibration-Endurance sinusoidal, p. 16-17		
4.5.2. Documentation of temperature tests [Annex Part 3, 3.8 – 3.10]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.C. Environmental Testing ► 4.C.1. DELTA Test Report-Component Testing ► Section 4. Test and Results ► Subsection 4.6 Low Temperature, p. 12; AND ► Subsection 4.7 Dry heat, p. 12		
4.5.3. Documentation of humidity tests [Annex Part 3, 3.11]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.C. Environmental Testing ► 4.C.1. DELTA Test Report-Component Testing ► Section 4. Test and Results ► Subsection 4.8 Damp heat, cyclic, p. 4.8		
4.5.4. Documentation of heavy seas protection tests [Annex Part 3, 3.12]	N/A, BWMS is not designed to be mounted on deck and/or subject to weather.		
4.5.5. Documentation of power supply fluctuation tests {Annex Part 3, 3.13]	4. QUALITY ASSURANCE AND QUALITY CONTROL ► 4.C. Environmental Testing ► 4.C.1. DELTA Test Report-Component Testing ► Section 4. Test and Results ► Subsection 4.18 Surve/voltage, p. 21		
4.5.6. Documentation of inclination tests [Annex Part 3, 3.14]	N/A		